

[RANGE OF CLAIMS]

[CLAIM 1]

A dual display mode liquid crystal display device, comprising:

- first and second substrates spaced apart from and facing each other;
- a first transparent electrode on an inner surface of the first substrate;
- a second transparent electrode on an inner surface of the second substrate;
- a liquid crystal layer between the first and second transparent electrodes;
- a first polarizer on an outer surface of the first transparent substrate, the first polarizer having a first light transmission axis;
- a front light unit on an outer surface of the first polarizer and formed of a transparent material;
- a selective reflection/transmission part on an outer surface of the second substrate, the selective reflection/transmission part selectively reflecting linearly polarized light corresponding to the first light transmission axis; and
- a second polarizer on an outer surface of the selective reflection/transmission part, the second polarizer having a second light transmission axis perpendicular to the first transmission axis,

wherein a region where the front light unit is situated is referred to as a first display side of a reflective mode, and a region where the second substrate is disposed is referred to as a second display side of a transmissive mode.

[CLAIM 2]

The device according to claim 1, wherein the selective reflection/transmission part includes a double brightness enhancement film (DBEF).

[CLAIM 3]

The device according to claim 1, wherein the liquid crystal layer has a twisted nematic (TN) mode.

[CLAIM 4]

The device according to claim 1, wherein the transmissive mode is a normally white mode and the reflective mode is a normally black mode.

[CLAIM 5]

The device according to claim 1, further comprising a thin film transistor at each pixel, which is a minimum unit for displaying an image, on the first substrate, wherein the first transparent electrode corresponds to a pixel electrode that is patterned at each pixel to be connected to the thin film transistor and the second transparent electrode corresponds to a common electrode that is formed on an entire surface of the second substrate.

[CLAIM 6]

A cellular phone, comprising:
a liquid crystal display device of claim 1 as a display device; and
a key pad adjacent to a second display side of the liquid crystal display device and for inputting.

[CLAIM 7]

The cellular phone according to claim 6, wherein the liquid crystal layer is twisted with a right angle in voltage OFF state and is arranged perpendicularly to the substrates in voltage ON state, and wherein in voltage OFF state,

light provided from the front light unit or outer light sources passes through the first polarized light, so that a first linearly polarized light is transmitted, the first linearly polarized light is changed to a second linearly polarized light while passing the liquid crystal layer, wherein the second linearly polarized light is perpendicular to the first linearly polarized light, the second linearly polarized light passes through the selective reflection/transmission part and the second polarizer without change and is changed to a first circularly polarized light by the retardation film, the first circularly polarized light is reflected at the cellular phone and is changed to a second circularly polarized light, which is symmetric to the first circularly polarized light right and left, the second circularly polarized light is changed to a first linearly polarized light through the retardation film, and the first linearly polarized light is blocked by the second polarizer.

[CLAIM 8]

A dual display mode liquid crystal display device, comprising:

first and second substrates spaced apart from and facing each other;

an array element on an inner surface of the first substrate and including a thin film transistor;

a first transparent electrode in a region covering the array element;

a color filter element on an inner surface of the second substrate;

a second transparent electrode in a region covering the color filter element;

a liquid crystal layer between the first and second transparent electrodes;

a first polarizer on an outer surface of the first transparent substrate, the first polarizer having a first light transmission axis;

a front light unit on an outer surface of the first polarizer and formed of a transparent material;

a selective reflection/transmission part on an outer surface of the second substrate, the selective reflection/transmission part selectively reflecting linearly polarized light corresponding to the first light transmission axis; and

a second polarizer on an outer surface of the selective reflection/transmission part, the second polarizer having a second light transmission axis perpendicular to the first transmission axis,

wherein a region where the front light unit is situated is referred to as a first display side of a reflective mode, and a region where the second substrate is disposed is referred to as a second display side of a transmissive mode.

[CLAIM 9]

A dual display mode liquid crystal display device, comprising:

first and second substrates spaced apart from and facing each other;

a color filter element on an inner surface of the first substrate;

a first transparent electrode in a region covering the color filter element;

an array element on an inner surface of the second substrate and including a thin film transistor;

a second transparent electrode is a region covering the array element;

a liquid crystal layer between the first and second transparent electrodes;

a first polarizer on an outer surface of the first transparent substrate, the first polarizer having a first light transmission axis;

a front light unit on an outer surface of the first polarizer and formed of a transparent material;

a selective reflection/transmission part on an outer surface of the second substrate, the selective reflection/transmission part selectively reflecting linearly polarized light corresponding to the first light transmission axis; and

a second polarizer on an outer surface of the selective reflection/transmission part, the second polarizer having a second light transmission axis perpendicular to the first transmission axis,

wherein a region where the front light unit is situated is referred to as a first display side of a reflective mode, and a region where the second substrate is disposed is referred to as a second display side of a transmissive mode.

[CLAIM 10]

The device according to claim 1, 8 or 9, further comprising a retardation film on an outer surface of the second polarizer, wherein the retardation film is a QWP having a phase difference of $\lambda/4$.